

# 34. Conversational access of large-scale knowledge graphs

PhD Student: **Delaram Javdani Rikhtehgar** (d.javdanirikhtehgar@utwente.nl)

Supervisors: **Dirk Heylen** (d.k.j.heylen@utwente.nl), **Shenghui Wang** (shenghui.wang@utwente.nl), **Stefan Schlobach** (k.s.schlobach@vu.nl)



## Introduction

- Explore the potential of Conversational AI, and Knowledge Representation technologies to enhance traditional museums and cultural heritage institutes.
- The focus is on making knowledge accessible to users within a VR exhibition while considering the goal of conveying the message of the exhibition, as well as the interest of the user which can lead to increased engagement and satisfaction.

## User-Agent-Knowledge Interaction Model

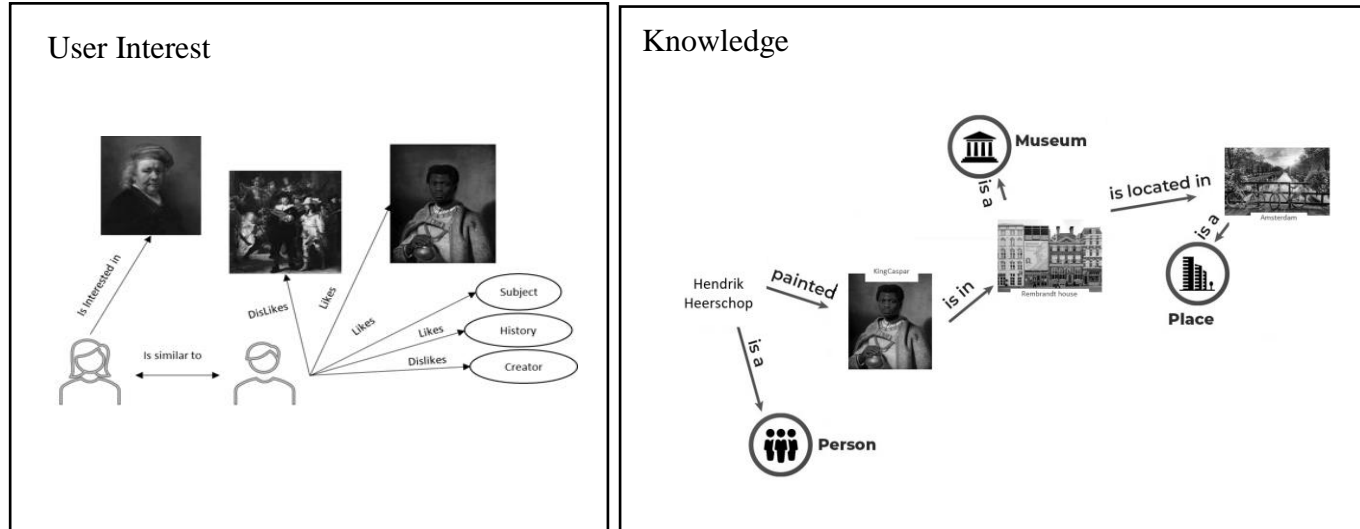
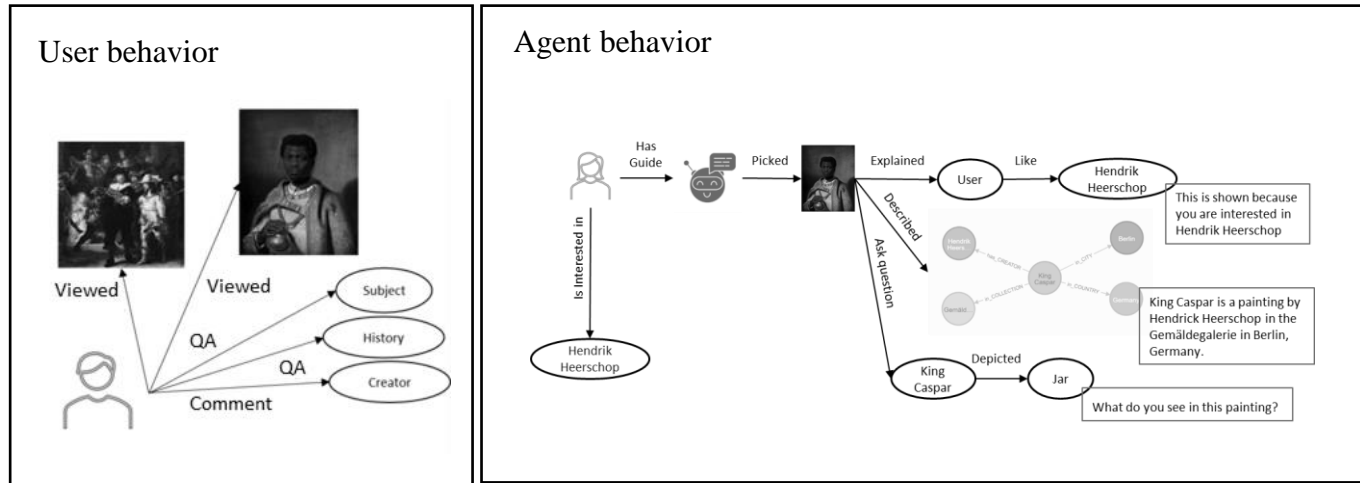
- The idea is to have four parts in the model:
  - **User Behavior:** This part stores all the user actions towards the system. These actions could include commenting about the artwork, asking questions, viewing paintings, or reading the text next to them.
  - **User Interest:** This part stores the system's inferences about the user's preferences. It could be interest in the painting itself or preferences related to the content, such as wanting to know the story behind it or having an interest on specific creator, like when the user generally prefers Rembrandt's work. These inferences can be confirmed or speculative.
  - **Agent Behavior:** This part involves the system's actions towards the user, such as explaining an artwork, answering questions, etc.
  - **Knowledge:** This part consists of a knowledge graph containing all the details about the artworks in the exhibition.

## Evaluation

- User feedback will be collected through surveys, interviews, or user testing sessions to evaluate the usability and effectiveness of the model.
- The evaluation process will also focus on assessing the model's performance when integrated into a VR exhibition.
- Factors such as system response time, accuracy, and scalability will be measured to identify any potential performance issues or areas for optimization.

## Research Question

- How to formally **model the interest of the user, the goal of the agent, and interactions?**
- How to leverage this model to improve engagement and satisfaction in interaction?



## Use Case

- In 2020, the Museum Rembrandthuis organized a special exhibition titled "HERE: Black in Rembrandt's Time." A collaboration between the University of Twente and the Museum Rembrandthuis resulted in the recreation of this exhibition using Unity.
- We are also looking to evaluate our model in other use cases.

